

**ACTA METALLURGICA ET MATERIALIA**  
**CONTENTS OF VOLUME 38**

**NUMBER 1**

- W. Kurz and R. Trivedi      1 Overview No. 87: Solidification microstructures: recent developments and future directions
- D. Y. Li, X. F. Wu and T. Ko      19 The texture of Ti-51.5 at.% Ni rolling plate and its effect on the all-round shape memory effect
- M. Morinaga, J. Saito,  
N. Yukawa and H. Adachi      25 Electronic effect on the ductility of alloyed TiAl compound
- G. Venkataraman,  
Y-W. Chung, Y. Nakasone  
and T. Mura      31 Free energy formulation of fatigue crack initiation along persistent slip bands: calculation of S-N curves and crack depths
- O. Kwon and A. J. DeArdo      41 On the recovery and recrystallization which attend static softening in hot-deformed copper and aluminum
- S. Suresh and  
J. R. Brockenbrough      55 A theory for creep by interfacial flaw growth in ceramics and ceramic composites
- Y. Deng and G. S. Ansell      69 Investigation of thermoelastic martensitic transformation in a Cu-Zn-Al alloy
- R. M. Aikin Jr and  
M. R. Plichta      77 Concurrent size and shape coarsening of  $\gamma'$  in Al-Ag
- S. K. Wu, H. C. Lin and  
T. S. Chou      95 A study of electrical resistivity, internal friction and shear modulus on an aged  $Ti_{49}Ni_{51}$  alloy
- B. J. Duggan, M. Sindel,  
G. D. Köhlhoff and  
K. Lücke      103 Oriented nucleation, oriented growth and twinning in cube texture formation
- D. Romeu      113 Quasicrystals, crystals and multiply twinned particles: a unified growth model
- S. K. Sharma and  
P. Mukhopadhyay      129 Diffusion studies in the metallic glass  $Zr_{61}Ni_{39}$  by Auger electron spectroscopy
- A. Pawłowski and  
W. Truszkowski      135 Mechanism of phase transformations during discontinuous dissolution in aged alloys

**NUMBER 2**

- i The *Acta Metallurgica* J. Herbert Hollomon Award
- R. H. Dauskardt,  
F. Haubensak and  
R. O. Ritchie      143 Overview No. 88: On the interpretation of the fractal character of fracture surfaces

F. R. N. Nabarro	161 Cottrell-Stokes Law and activation theory
M. Kikuchi, A. Fernandez Guillermet, M. Hillert, G. Cliff and G. W. Lorimer	165 Mechanism of Widmanst�tten plate formation in chromium-rich Cr-Ni alloys
Y. Enomoto	173 Nucleation and growth processes with concentration fluctuations
J. P. Rogers III, P. Wynblatt, S. M. Foiles and M. I. Baskes	177 Monte Carlo simulation of the Cu-Ag (001) semicoherent interphase boundary
V. Tvergaard	185 Analysis of tensile properties for a whisker-reinforced metal-matrix composite
W. Schaarw�chter and H. Ebener	195 Acoustic emission: a probe into dislocation dynamics in plasticity
E. M. Schulson, L. J. Briggs and I. Baker	207 The strength and ductility of Ni <sub>3</sub> Si
D. V. Wilson, M. Zandrahimi and W. T. Roberts	215 Effects of changes in strain path on work-hardening in CP aluminium and an Al-Cu-Mg alloy
J. J. Hoyt	227 Linear spinodal decomposition in a regular ternary alloy
P. V. Evans, Satish Vitta, R. G. Hamerton, A. L. Greer and D. Turnbull	233 Solidification of germanium at high undercooling: morphological stability and the development of grain structure
D. Turnbull	243 The gram-atomic volumes of alloys of transition metals with Al and Si
Y-H. Chiao and D. R. Clarke	251 Residual stress induced fracture in glass-sapphire com- posites: planar geometry
D. R. Clarke and Y-H. Chiao	259 Residual stress induced fracture in glass-sapphire com- posites: cylindrical geometry
A. N. Campbell and D. Turnbull	269 Kinetics and morphology of the precipitation of Pb <sub>3</sub> Au from dilute Pb(Au) solid solutions
M. L�bbehusen and H. Mehrer	283 Self-diffusion in $\alpha$ -iron: the influence of dislocations and the effect of the magnetic phase transition
J. L. Pelegrina and M. Ahlers	293 The stability of the martensitic phases in Cu-Zn-Al at an electron concentration of 1.534
A. Hamel, A. Vincent and R. Foug�res	301 A model for the unloading in the saturation fatigue stage of pure polycrystalline aluminium

P. Pirouz, R. Chaim, U. Dahmen and K. H. Westmacott	313 The martensitic transformation in silicon—I. Experimental observations
U. Dahmen, K. H. Westmacott, P. Pirouz and R. Chaim	323 The martensitic transformation in silicon—II. Crystallographic analysis
P. Pirouz, U. Dahmen, K. H. Westmacott and R. Chaim	329 The martensitic transformation in silicon—III. Comparison with other work
C. Mai, S. Etienne, H. Satha et J. Perez	337 Étude et analyse de la déformation non-élastique autour de la transition vitreuse d'un verre borosilicate
A. Marty, M. Bessiere, F. Bley, Y. Calvayrac and S. Lefebvre	345 Determination of long range order in Ni-base ternary alloys by X-ray anomalous diffraction using synchrotron radiation
G. R. Hugo and B. C. Muddle	351 The morphology of precipitates in an Al-Ge alloy—I. Experimental observations
G. R. Hugo and B. C. Muddle	365 The morphology of precipitates in an Al-Ge alloy—II. Analysis using symmetry
A. Roósz and H. E. Exner	375 Numerical modelling of dendritic solidification in aluminium-rich Al-Cu-Mg alloys
<i>Corrigenda</i>	381

### NUMBER 3

A. van den Beukel and J. Sietsma	383 The glass transition as a free volume related kinetic phenomenon
W. J. Botta F., O. Florêncio, C. R. Grandini, H. Tejima and J. A. R. Jordão	391 Mechanical multiple relaxation spectra in Nb-Zr-O alloys
S. M. Pickard and F. Guiu	397 Strain-ageing behaviour of fatigued Fe-N-C alloys
Chun-Hway Hsueh	403 Evaluation of interfacial shear strength, residual clamping stress and coefficient of friction for fiber-reinforced ceramic composites
J. D. Hunt	411 A numerical analysis of time dependent isolated dendritic growth for conditions near the steady state
Q. F. Fang and T. S. Kê (Ge Tingsui)	419 Low temperature internal friction peaks associated with the interaction between dislocations and point defects in dilute aluminium-magnesium solid solutions
Zhao Jicheng and Jin Zhanpeng	425 Thermodynamics of the massive, bainitic and martensitic transformations in Fe-C, Fe-Ni, Fe-Cr and Fe-Cu alloys

B. Jönsson and J. Ågren	433	On the massive transformation
M. K. Stalker and J. E. Morral	439	Classification of concentration profiles in quaternary diffusion couples
O. R. Myhr and Ø. Grong	449	Dimensionless maps for heat flow analyses in fusion welding
R. S. Mishra, H. Jones and G. W. Greenwood	461	Creep of a low carbon steel at low stresses and intermediate temperatures
E. Tschegg, H. O. K. Kirchner and M. Kocak	469	Cracks at the ferrite-austenite interface
J. W. Chan, J. Glazer, Z. Mei, P. A. Kramer and J. W. Morris Jr	479	Fracture toughness of 304 stainless steel in an 8 tesla field
M. Manoharan and J. J. Lewandowski	489	Crack initiation and growth toughness of an aluminum metal-matrix composite
V. Raman and T. G. Langdon	497	Cyclic grain boundary migration and sliding in pure aluminum
L. L. Lisiecki and J. R. Weertman	509	Orientation effects on the elevated temperature fatigue of copper single crystals
K. Chattopadhyay, V. T. Swamy and S. L. Agarwala	521	The solidification behaviour of undercooled Al-Cu alloys in contact with the primary phases
E. Werner and W. Prantl	533	Slip transfer across grain and phase boundaries

#### NUMBER 4

E. L. Hall and Shyh-Chin Huang	539	Microstructures of rapidly-solidified binary TiAl alloys
M. A. Morris and D. G. Morris	551	Dispersoid additions and their effect on high temperature deformation of Fe-Al
Zi-Kui Liu and J. Ågren	561	On two-phase coherent equilibrium in binary alloys
J. Svoboda, I. Turek and V. Sklenička	573	Unified thermodynamic treatment of cavity nucleation and growth in high temperature creep
B. Orlans-Joliet, J. H. Driver and F. Montheillet	581	Plane strain compression of silicon-iron single crystals
L. C. Lim, Y. K. Tay and H. S. Fong	595	Fatigue damage and crack nucleation mechanisms at intermediate strain amplitudes
S. B. Biner and W. A. Spitzig	603	Densification of iron compacts with various initial porosities under hydrostatic pressure

C. R. Heiple, S. H. Carpenter and S. S. Christiansen	611	Fracture of boron particles in 2219 aluminum as a known acoustic emission source
C.-H. Lin, S. L. Sass, C. W. Allen and L. E. Rehn	619	Effects of electron and ion irradiation on the dislocation structure of [001] twist boundaries in Fe-S alloys
V. Lakshmanan, J. C. M. Li and C. L. Tsai	625	Magnetic domains induced by shear bands in metallic glasses
D. H. StJohn	631	The peritectic reaction
F. R. N. Nabarro	637	Kinetics of Mughrabi's model of internal stresses
P. Adeva, J. L. González-Carrasco and M. Aballe	643	Microstructure and mechanical properties of RS Ni-Cr-Al melt-spun alloys
M. Yoshihara and R. B. McLellan	655	Thermodynamics of the palladium-boron-hydrogen system
J. Courbon, M. Ignat and F. Louchet	663	Compression creep of <110>-oriented single crystals of nickel-base superalloy CMSX-2
J. Rösler and E. Arzt	671	A new model-based creep equation for dispersion strengthened materials
S. Muto, R. Oshima and F. E. Fujita	685	Elastic softening and elastic strain energy consideration in the f.c.c.-f.c.t. transformation of Fe-Pd alloys
<i>Corrigenda</i>	695	

#### NUMBER 5

L. P. Kubin and Y. Estrin	697	Evolution of dislocation densities and the critical conditions for the Portevin-Le Châtelier effect
F. W. Noble, B. A. Senior and B. L. Eyre	709	The effect of phosphorus on the ductility of 9Cr-1Mo steels
P. V. Evans, G. Devaud, T. F. Kelly and Yeon-Wook Kim	719	Solidification of highly undercooled Si and Ge droplets
C. W. Price	727	Use of Kolmogorov-Johnson-Mehl-Avrami kinetics in recrystallization of metals and crystallization of metallic glasses
T. Takasugi, D. Shindo, O. Izumi and M. Hirabayashi	739	Metallographic and structural observations in the pseudo-binary section $\text{Ni}_3\text{Si}-\text{Ni}_3\text{Ti}$ of the Ni-Si-Ti system
T. Takasugi, M. Nagashima and O. Izumi	747	Strengthening and ductilization of $\text{Ni}_3\text{Si}$ by the addition of Ti elements

A. Planes, R. Romero and M. Ahlers	757 The martensitic transition temperature in ternary Cu-Zn-Al alloys. Influence of the L <sub>2</sub> <sub>1</sub> structure
Y. Enomoto and R. Kato	765 Scaling behavior of two-dimensional vertex model for normal grain growth
Y. C. Chen, M. E. Fine and J. R. Weertman	771 Microstructural evolution and mechanical properties of rapidly solidified Al-Zr-V alloys at high temperatures
D. Wolf	781 Structure-energy correlation for grain boundaries in f.c.c. metals—III. Symmetrical tilt boundaries
D. Wolf	791 Structure-energy correlation for grain boundaries in f.c.c. metals—IV. Asymmetrical twist (general) boundaries
I. N. Klimenko	799 Anomaly of the yield stress and magnetic state in $\gamma$ -Fe-18Cr-Ni alloys
J. Crampon and R. Duclos	805 Creep and microstructure of electrical discharge machinable Si <sub>3</sub> N <sub>4</sub> composites
U-In Chung and Jai-Young Lee	811 A kinetic study on the hydrogen induced amorphization in ErNi <sub>2</sub> laves phase
Y. Shiwa, H. P. Stüwe and E. Pink	819 Anelastic effects in molybdenum due to the precipitation and dissolution of oxides at low temperatures
A. Coujou, Ph. Lours, N. A. Roy, D. Caillard and N. Clement	825 Determination of the local tensile axis direction in a TEM <i>in situ</i> strained $\gamma'$ single crystal—a finite element approach
M. Y. He, H. C. Cao and A. G. Evans	839 Mixed-mode fracture: the four-point shear specimen
S. Kajiwara and T. Kikuchi	847 Shape memory effect and related transformation behavior in Fe-Ni-C alloys
Y. Koyama	857 <i>In situ</i> observation of spinodal decomposition in In-35 at.% Tl-13.5 at.% Pb alloys
A. H. Chokshi and T. G. Langdon	867 The nucleation and growth of cavities in a superplastic quasi-single phase copper alloy
<i>Corrigenda</i>	879

#### NUMBER 6

J. M. Howe and N. Prabhu	881 The structure of kinks at dislocation interphase boundaries and their role in boundary migration—I. Experimental observation of kink motion
N. Prabhu and J. M. Howe	889 The structure of kinks at dislocation interphase boundaries and their role in boundary migration—II. Kinetic analyses including kink motion

J. T. Staley Jr and A. Saxena	897	Mechanisms of creep crack growth in 1 wt% antimony–copper: implications for fracture parameters
Y. Umakoshi, T. Sakagami, T. Hirano and T. Yamane	909	High temperature deformation of MoSi <sub>2</sub> single crystals with the C11 <sub>b</sub> structure
F. J. Humphreys and P. N. Kalu	917	The plasticity of particle-containing polycrystals
L. A. Bendersky, W. J. Boettger, B. P. Burton, F. S. Biancaniello and C. B. Shoemaker	931	The formation of ordered $\omega$ -related phases in alloys of composition Ti <sub>4</sub> Al <sub>3</sub> Nb
C. S. Pande and E. Dantsker	945	On a stochastic theory of grain growth—II
B. L. Adams, Jun Wu Zhao and D. O'Hara	953	Analysis of interface damage heterogeneity in polycrystalline materials
Gang Wan and P. R. Sahm	967	Ostwald ripening in the isothermal rheocasting process
R. Shimizu, J. Harase and D. J. Dingley	973	Prediction of secondary recrystallization texture in Fe–3% Si by three-dimensional texture analysis
F. Hehmann	979	Metastable phase transformation of rapidly solidified Mg-base Mg–Al alloys
R. A. MacKay and M. V. Nathal	993	$\gamma'$ Coarsening in high volume fraction nickel-base alloys
M. Yoshihara and R. B. McLellan	1007	The diffusion of hydrogen in palladium–boron solid solutions
P. E. Magnusen, D. J. Srolovitz and D. A. Koss	1013	A simulation of void linking during ductile microvoid fracture
Yu Zhong-Hai, Xie Yi-Fan and Gao Jia	1023	Texture distribution through-the-thickness after cold-rolling of 3% silicon steel
W. Krakow	1031	Multiplicity of atomic structure for $\Sigma = 17/[001]$ symmetrical tilt boundaries in gold
C. Rieker and D. G. Morris	1037	Heterogeneous nucleation during rapid solidification by laser surface melting
W-B. Li and K. E. Easterling	1045	The influence of particle shape on Zener drag
O. Blaschko, R. Glas and P. Weinzierl	1053	The formation of ordered $\delta'$ -phase in Al–Li alloys by diffuse and small angle neutron scattering

Y. L. Klipfel, M. Y. He, R. M. McMeeking, A. G. Evans and R. Mehrabian	1063 The processing and mechanical behavior of an aluminum matrix composite reinforced with short fibers
P. M. Kelly, A. Jostsons and R. G. Blake	1075 The orientation relationship between lath martensite and austenite in low carbon, low alloy steels
R. F. Cook	1083 Segregation effects in the fracture of brittle materials: $\text{Ca}-\text{Al}_2\text{O}_3$
N. Rouag, G. Vigna and R. Penelle	1101 Evolution of local texture and grain boundary characteristics during secondary recrystallisation of Fe-3%Si sheets
W. Y. Yeung	1109 Non-octahedral deformation activity in cold rolled 70:30 brass and its influence on the development of brass texture
M. Kikuchi, T. Urabe, G. Cliff and G. W. Lorimer	1115 The loss of driving force due to volume diffusion ahead of a migrating boundary in a cellular precipitation reaction
T. G. Nieh and J. Wadsworth	1121 Superplastic behaviour of a fine-grained, yttria-stabilized, tetragonal zirconia polycrystal (Y-TZP)
M. D. Thouless	1135 Fracture of a model interface under mixed-mode loading
J. Svoboda and V. Sklenička	1141 Thermal cavity nucleation at intergranular inclusions in high temperature creep
G. Vekinis, M. F. Ashby and P. W. R. Beaumont	1151 <i>R</i> -curve behaviour of $\text{Al}_2\text{O}_3$ ceramics
Y-H. Chiao and I-Wei Chen	1163 Martensitic growth in $\text{ZrO}_2$ —an <i>in situ</i> , small particle, TEM study of a single-interface transformation
H. Matsui and M. Koiwa	1175 Hydride precipitation in vanadium thin foils under stress
W. C. Johnson and P. W. Voorhees	1183 On the classification of phase transitions involving changes in composition
L. M. Hsiung and N. S. Stoloff	1191 A point defect model for fatigue crack initiation in $\text{Ni}_3\text{Al} + \text{B}$ single crystals

#### NUMBER 7

O. B. Pedersen	1201 Overview No. 89: Thermoelasticity and plasticity of composites—II. A model system
O. B. Pedersen	1221 Overview No. 89: Mechanism maps for cyclic plasticity and fatigue of single phase materials

P. S. Follansbee, J. C. Huang and G. T. Gray	1241	Low-temperature and high-strain-rate deformation of nickel and nickel-carbon alloys and analysis of the constitutive behavior according to an internal state variable model
J. R. Dryden and G. R. Purdy	1255	On the role of applied and misfit stress in discontinuous precipitation
R. D. K. Misra and T. V. Balasubramanian	1263	Stress enhanced grain boundary segregation of impurity elements in a low alloy steel
L. Contardo and G. Guénin	1267	Training and two way memory effect in Cu-Zn-Al alloy
J. Shirokoff, J. Cheung and U. Erb	1273	On the usefulness of epitaxy experiments in evaluating interface models
J.-S. Wang and Z. Suo	1279	Experimental determination of interfacial toughness curves using Brazil-nut-sandwiches
A. A. Golestaneh and J. M. Carpenter	1291	Study of the martensitic transformation in shape-memory nitinol alloy by time-of-flight neutron diffraction techniques
Ho Yong Lee and Suk-Joong L. Kang	1307	Chemically induced grain boundary migration and recrystallization in $\text{Al}_2\text{O}_3$
T. Magnin, R. Chieragatti and R. Oltra	1313	Mechanism of brittle fracture in a ductile 316 alloy during stress corrosion
Yinong Liu and P. G. McCormick	1321	Factors influencing the development of two-way shape memory in NiTi
K. I. Moore, D. L. Zhang and B. Cantor	1327	Solidification of Pb particles embedded in Al
A. Kimura and H. K. Birnbaum	1343	Anomalous strain rate dependence of the serrated flow in Ni-H and Ni-C-H alloys
W. C. Johnson, T. A. Abinandanan and P. W. Voorhees	1349	The coarsening kinetics of two misfitting particles in an anisotropic crystal

#### NUMBER 8

D. Juul Jensen and N. Hansen	1369	Flow stress anisotropy in aluminium
T. Kawabata, T. Abumiya, T. Kanai and O. Izumi	1381	Mechanical properties and dislocation structures of TiAl single crystals deformed at 4.2–293 K
J. Harase and R. Shimizu	1395	Texture evolution by grain growth in the presence of MnS and AlN precipitates in Fe–3% Si alloy
J. J. Hoyt	1405	The continuum theory of nucleation in multicomponent systems
R. Raj	1413	Premelting at triple grain junctions

G. Sasaki, D. Shindo, K. Hiraga, M. Hirabayashi and T. Takasugi	1417	High resolution electron microscopy of tilt boundary in $Ni_3(Al_{0.6}Ti_{0.4})$ bicrystal
Jin Yu and J. O. Chung	1423	Creep rupture by diffusive growth of randomly distributed cavities—I. Instantaneous cavity nucleation
Jin Yu and J. O. Chung	1435	Creep rupture by diffusive growth of randomly distributed cavities—II. Continual cavity nucleation
W. A. Spitzig	1445	Effect of hydrostatic pressure on deformation, damage evolution, and fracture of iron with various initial porosities
H. J. Frost, C. V. Thompson and D. T. Walton	1455	Simulation of thin film grain structures—I. Grain growth stagnation
K. Y. Hour and J. F. Stubbins	1463	Crack growth behavior and failure micromechanisms in three heat resistant materials at elevated temperature
Ph. Chappellier, R. K. Ray and J. J. Jonas	1475	Prediction of transformation textures in steels
H. E. Dèvre, A. G. Evans, G. R. Odette, R. Mehrabian, M. L. Emilian and R. J. Hecht	1491	Ductile reinforcement toughening of $\gamma$ -TiAl: effects of debonding and ductility
G. J. Mahon, J. M. Howe and A. K. Vasudevan	1503	Microstructural development and the effect of interfacial precipitation on the tensile properties of an aluminum/ silicon-carbide composite
P. Desnain, Y. Fautrelle, J.-L. Meyer, J.-P. Riquet and F. Durand	1513	Prediction of equiaxed grain density in multicomponent alloys, stirred electromagnetically
Y.-J. Baik and D. N. Yoon	1525	The discontinuous precipitation of a liquid phase in Mo–Ni induced by diffusional coherency strain
F. D. Fischer	1535	A micromechanical model for transformation plasticity in steels
L. Renaud, F. Fouquet, A. Elhamdaoui, J. P. Millet, H. Mazille and J. L. Crolet	1547	Surface alloys obtained on mild steel by laser treatment of electroless nickel coatings
P. Barreau, C. Gérard, J. F. Fries et J. P. Traverse	1555	Influence de la ségrégation dynamique du soufre sur le comportement mécanique du nickel pur
J. T. Evans, Wang Ningyun and H. W. Chandler	1565	Creep of fibre composite beams in bending
P. H. Leo, W. W. Mullins, R. F. Sekerka and J. Viñals	1573	Effect of elasticity on late stage coarsening

- Sun Ig Hong and C. Laird** 1581 Mechanisms of slip mode modification in f.c.c. solid solutions
- Dong-Il Kwon and R. J. Asaro** 1595 Hydrogen-assisted ductile fracture in spheroidized 1518 steel

#### NUMBER 9

i 1990 Acta Metallurgica Gold Medal

- G. Grewal and S. Ankem** 1607 Modeling matrix grain growth in the presence of growing second phase particles in two phase alloys
- M. Yamashita, M. Yoshioka, T. Mimaki, S. Hashimoto and S. Miura** 1619 Stress-corrosion-cracking of (100)-twist boundaries in Cu-9 at.%Al alloy
- Junmin Liu, Yaohe Zhou and Baolu Shang** 1625 Lamellar eutectic stable growth—I. Modeling
- Junmin Liu, Yaohe Zhou and Baolu Shang** 1631 Lamellar eutectic stable growth—II. Experiment on Al-Si eutectic
- Ll. Mañosa, A. Planes, D. Rouby and J. L. Macqueron** 1635 Acoustic emission in martensitic transformations
- K. F. Ha, Y. B. Xu, X. H. Wang and Z. Z. An** 1643 A study on the dislocation-free zone ahead of the crack tips in bulk metallic single crystals
- F.-S. Shieh and S. L. Sass** 1653 Experimental and theoretical studies of the dislocation structure of NiO-Pt interfaces
- Eon-Sik Lee and Young G. Kim** 1669 A transformation kinetic model and its application to Cu-Zn-Al shape memory alloys—I. Isothermal conditions
- Eon-Sik Lee and Young G. Kim** 1677 A transformation kinetic model and its application to Cu-Zn-Al shape memory alloys—II. Non-isothermal conditions
- Zhai Tong-Guang, Lin Shi and Xiao Ji-Mei** 1687 Influence of non-geometric effect of PSB on crack initiation in aluminium single crystal
- Bao-Tong Ma and Campbell Laird** 1693 The effect of ramp-loading on short crack growth kinetics and life behavior of copper single crystals in fatigue
- R. H. Jones** 1703 Analysis of hydrogen-induced subcritical intergranular crack growth of iron and nickel
- X. Chen, R. Caretta, W. Zielinski and W. W. Gerberich** 1719 Carbon/oxygen synergism during elevated temperature sustained load cracking
- Y. Limoge** 1733 Activation volume for diffusion in a metallic glass

- L. A. Xue, D. S. Farquhar,  
T. W. Noh, A. J. Sievers  
and R. Raj 1743 Optical and mechanical properties of zinc sulphide  
diamond composites
- M. Hayakawa, K. Adachi  
and M. Oka 1753 Crystallographic analysis of the monoclinic herringbone  
structure in an arc-melted  $ZrO_2$ -2 mol%  $Y_2O_3$  alloy
- M. Hayakawa, K. Adachi  
and M. Oka 1761 Tweed contrast with (223) habit in arc-melted zirconia-  
yttria alloys
- F. J. J. van Loo, B. Pieraggi  
and R. A. Rapp 1769 Interface migration and the Kirkendall effect in diffusion-  
driven phase transformations
- B. Pieraggi, R. A. Rapp,  
F. J. J. van Loo  
and J. P. Hirth 1781 Interfacial dynamics in diffusion-driven phase trans-  
formations

#### NUMBER 10

- H. R. Shercliff and  
M. F. Ashby 1789 Overview No. 90: A process model for age hardening of  
aluminium alloys—I. The model
- H. R. Shercliff and  
M. F. Ashby 1803 Overview No. 90: A process model for age hardening of  
aluminium alloys—II. Applications of the model
- M. Sundararaman, W. Chen,  
V. Singh and R. P. Wahi 1813 TEM investigation of  $\gamma'$  free bands in Nimonic PE16 under  
LCF loading at room temperature
- A. G. Khachaturyan and  
D. E. Laughlin 1823 Structural transformations during decomposition in Cu-Be  
alloys
- Kyung-Tae Park,  
Enrique J. Lavernia and  
Farghali A. Mohamed 1837 Creep behavior and substructure in an Al-Li alloy
- J. Harase, R. Shimizu and  
N. Takahashi 1849 Coincidence grain boundary and (100)[001] secondary re-  
crystallization in Fe-3% Si
- Z. G. Liu, T. Al-Kassab  
and P. Haasen 1857 The atomic structure of Al-B2 interfaces in a Ni-Be alloy
- U. Gahn and W. Pitsch 1863 The intermediate states of single-phase short-range order  
reactions—Monte Carlo study
- S. P. Gupta and R. Nakkalil 1871 Kinetics of discontinuous coarsening of cellular precipitate  
in a Ni-8 at.% In alloy
- D. M. Farkas, T. Yamashita  
and J. Perkins 1883 On the energetics of flickering contrast observed in TEM  
images of an aged 53Cu-45Mn-2Al damping alloy
- F. Zok and C. L. Hom 1895 Large scale bridging in brittle matrix composites
- K. Davanas and  
A. A. Solomon 1905 Theory of intergranular creep cavity nucleation, growth  
and interaction

T. Leffers and J. B. Bilde-Sørensen	1917	Intra- and intergranular heterogeneities in the plastic deformation of brass during rolling
H. J. Fecht	1927	Thermodynamic properties and stability of grain boundaries in metals based on the universal equation of state at negative pressure
A. Heinz and P. Neumann	1933	Crack initiation during high cycle fatigue of an austenitic steel
T. L. Dragone and W. D. Nix	1941	Geometric factors affecting the internal stress distribution and high temperature creep rate of discontinuous fiber reinforced metals
N. P. Cannon, E. M. Schulson, T. R. Smith and H. J. Frost	1955	Wing cracks and brittle compressive fracture
E. M. Schulson	1963	The brittle compressive fracture of ice
R. N. Ghosh, R. V. Curtis and M. McLean	1977	Creep deformation of single crystal superalloys—modelling the crystallographic anisotropy
R. N. Wright and J. R. Knibloe	1993	The influence of alloying on the microstructure and mechanical properties of P/M Ni <sub>3</sub> Al
A. Roósz and H. E. Exner	2003	Ternary restricted-equilibrium phase diagrams—I. A first report: general principles and definitions
A. Roósz and H. E. Exner	2009	Ternary restricted-equilibrium phase diagrams—II. Practical application: aluminium-rich corner of the Al–Cu–Mg system
P. R. Rios	2017	Effect of size distribution on the kinetics of normal grain growth and of particle coarsening
G. S. Nakayama and J. C. Gibeling	2023	Constant substructure creep of aluminum following stress reductions

#### NUMBER 11

P. Rozenak, I. M. Robertson and H. K. Birnbaum	2031	HVEM studies of the effects of hydrogen on the deformation and fracture of AISI type 316 austenitic stainless steel
I. Dutta and D. L. Bourell	2041	Influence of dislocation density and distribution on the aging behavior of 6061 Al–SiC <sub>w</sub> composites
W. A. Curtin and K. Futamura	2051	Microcrack toughening?
K. Ishizaki	2059	Phase diagrams under high total gas pressures—Ellingham diagrams for hot isostatic press processes
J. Noordhuis and J. Th. M. De Hosson	2067	Ne implantation induced transformation in stainless steel

Kai-Tak Wan and B. R. Lawn	2073	Surface forces at crack interfaces in mica in the presence of capillary condensation
Sun Ig Hong and C. Laird	2085	Transient cyclic stress-strain response and cumulative damage in Cu-16 at.% Al single crystals fatigued under variable straining
G. A. Henshall and A. K. Miller	2101	Simplifications and improvements in unified constitutive equations for creep and plasticity—I. Equations development
G. A. Henshall and A. K. Miller	2117	Simplifications and improvements in unified constitutive equations for creep and plasticity—II. Behavior and capabilities of the model
Chingshen Li	2129	Vector CTD analysis for crystallographic crack growth
Chonghua Zhong, Nengyun Jin (N. Y. Jin), Xin Zhou, Erkou Meng and Xianfeng Chen	2135	Cyclic deformation of AISI-310 stainless steel—I. Cyclic stress-strain responses
Nengyun Jin (N. Y. Jin), Chonghua Zhong and Xianfeng Chen	2141	Cyclic deformation of AISI-310 stainless steel—II. Saturation dislocation structures
Kyung-Tae Park, Enrique J. Lavernia and Farghali A. Mohamed	2149	High temperature creep of silicon carbide particulate reinforced aluminum
R. B. McLellan, C. Ko and F. R. Brotzen	2161	The fast diffusion of Au in Pb
Baihe Miao, Keming Fang, Weimin Bian and Guoxun Liu	2167	On the microstructure of graphite spherulites in cast irons by TEM and HREM
A. T. Motta and D. R. Olander	2175	Theory of electron-irradiation-induced amorphization
D. K. Das and R. Sivakumar	2187	Modelling of the temperature and the velocity of ceramic powder particles in a plasma flame—I. Alumina
D. K. Das and R. Sivakumar	2193	Modelling of the temperature and the velocity of ceramic powder particles in a plasma flame—II. Zirconia
P. Vennégues, M. C. Cadeville, V. Pierron-Bohnes and M. Afyouni	2199	Strong decrease of the activation energy as a function of Al content in $\text{FeAl}_x$ alloys ( $x \leq 30$ at.%) deduced from kinetic measurements of ordering
F.-S. Shieh, R. Raj and S. L. Sass	2215	Control of the mechanical properties of metal-ceramic interfaces through interfacial reactions

B. W. Choi, Y. G. Deng, C. McCullough, B. Paden and R. Mehrabian	2225	Densification of rapidly solidified titanium aluminide powders—I. Comparison of experiments to HIPing models
B. W. Choi, J. Marschall, Y. G. Deng, C. McCullough, B. Paden and R. Mehrabian	2245	Densification of rapidly solidified titanium aluminide powders—II. The use of a sensor to verify HIPing models
H. Zhao and G. C. Weatherly	2253	The formation of multi-domain precipitates in a Ni–W alloy
H. Inui, S. I. Hong and C. Laird	2261	A TEM study of dislocation structures in fatigued Cu–16 at.% Al single crystals
T. G. Zocco, M. F. Stevens, P. H. Adler, R. I. Sheldon and G. B. Olson	2275	Crystallography of the $\delta \rightarrow \alpha$ phase transformation in a Pu–Ga alloy
J. Dutkiewicz and G. Kostorz	2283	Strengthening of cobalt–tungsten alloys upon discontinuous precipitation
C. Marsh and Haydn Chen	2287	An <i>in situ</i> X-ray diffraction study of precipitation from a supersaturated solid solution: the $\gamma'$ precipitate in a Ni–12.5 at.% Al alloy
G. Ceder, D. de Fontaine, H. Dreysse, D. M. Nicholson, G. M. Stocks and B. L. Gyorffy	2299	<i>Ab initio</i> study of the Cu–Pd one-dimensional long period superstructure phase diagram
K. T. Venkateswara Rao and R. O. Ritchie	2309	Mechanisms influencing the cryogenic fracture-toughness behavior of aluminum–lithium alloys
R. H. Dauskardt, W. C. Carter, D. K. Veirs and R. O. Ritchie	2327	Transient subcritical crack-growth behavior in transformation-toughened ceramics
Weizhong Chen, T. Y. Hsu (Xu Zuyao), Shuchuan Chen and Jihua Zhang	2337	The internal friction of the pearlitic, bainitic and martensitic transformations in Fe–Ni–C alloys
G. Palumbo and K. T. Aust	2343	Structure-dependence of intergranular corrosion in high purity nickel
B. Cunningham and K. H. G. Ashbee	2353	Operational characteristics of a marmem device
R. D. K. Misra and T. V. Balasubramanian	2357	Effects of microstructure on grain boundary segregation processes in low alloy steels
Gang Wan and P. R. Sahm	2367	Particle growth by coalescence and Ostwald ripening in rheocasting of Pb–Sn

**NUMBER 12**

- |   |      |  |
|---|------|--|
| B. G. Pound   | 2373 | Hydrogen trapping in precipitation-hardened alloys   |
| Qiang-Li, W. Kesternich,<br>H. Schroeder, D. Schwahn<br>and H. Ullmaier               | 2383 | Gas densities in helium bubbles in nickel measured by small angle neutron scattering   |
| C. A. Hippsley,<br>M. Strangwood<br>and J. H. DeVan                                   | 2393 | Effects of chromium on crack growth and oxidation in nickel aluminide  |
| B. N. Cox   | 2411 | Interfacial sliding near a free surface in a fibrous or layered composite during thermal cycling                             |
| B. N. Cox, M. S. Dadkhah,<br>M. R. James, D. B. Marshall,<br>W. L. Morris and M. Shaw | 2425 | On determining temperature dependent interfacial shear properties and bulk residual stresses in fibrous composites           |
| M.-J. Lii, X.-F. Chen,<br>Y. Katz and<br>W. W. Gerberich                              | 2435 | Dislocation modeling and acoustic emission observation of alternating ductile/brittle events in Fe-3wt%Si crystals           |
| T. Mohri  | 2455 | Kinetic path for a relaxation process of an f.c.c. disordered phase  |
| R. A. Vandermeer  | 2461 | Modeling diffusional growth during austenite decomposition to ferrite in polycrystalline Fe-C alloys                         |
| H. J. Hegge and<br>J. Th. M. De Hosson  | 2471 | Microstructure of laser treated Al alloys  |
| A. Christian, O. Kanert and<br>J. Th. M. De Hosson                                    | 2479 | Dislocation dynamics in vanadium: a nuclear magnetic resonance and transmission electron microscopic study                   |
| J. LLorca and M. Elices   | 2485 | Fracture resistance of fiber-reinforced ceramic matrix composites  |
| A. C. F. Cocks and<br>A. A. Searle  | 2493 | Cavity growth in ceramic materials under multiaxial stress states  |
| L. C. Lim and T. Watanabe   | 2507 | Fracture toughness and brittle-ductile transition controlled by grain boundary character distribution (GBCD) in polycrystals |
| R. Brezny and D. J. Green   | 2517 | The effect of cell size on the mechanical behavior of cellular materials   |
| J. H. Chen, L. Zhu<br>and H. Ma   | 2527 | On the scattering of the local fracture stress $\sigma_f^*$  |
| S. M. Pickard and B. Derby  | 2537 | The deformation of particle reinforced metal matrix composites during temperature cycling                                    |

R. Monzen, Y. Sumi, K. Kitagawa and T. Mori	2553 Nanometer grain boundary sliding in Cu: [011] symmetric tilt boundaries, misorientation dependence and anisotropy
B. Cunningham and K. H. G. Ashbee	2561 An <i>in situ</i> SEM Kossel X-ray diffraction study of pseudo-elasticity
A. G. Crouch and J. Robertson	2567 Creep and oxygen diffusion in magnetite
A. Zielinski	2573 Effect of hydrogen on internal friction of some f.c.c. metals
T. Ungár, Ph. A. Dubey and G. Kostorz	2583 Distortion scattering due to Guinier-Preston zones in Al-Ag
M. Gremaud, M. Carrard and W. Kurz	2587 The microstructure of rapidly solidified Al-Fe alloys subjected to laser surface treatment
W. J. Moberly, J. L. Proft, T. W. Duerig and R. Sinclair	2601 Deformation, twinning and thermo-mechanical strengthening of $Ti_{50}Ni_{47}Fe_3$
J. Yang, C. Cady, M. S. Hu, F. Zok, R. Mehrabian and A. G. Evans	2613 Effects of damage on the flow strength and ductility of a ductile Al alloy reinforced with SiC particulates
M. A. Gibson and G. W. Delamore	2621 Nucleation and growth kinetics of stable and metastable eutectics in FeSiB metallic glasses
C. P. Ling and P. G. McCormick	2631 Strain rate sensitivity and transient behaviour in an Al-Mg-Si alloy
H. M. Jensen	2637 Mixed mode interface fracture criteria
I. E. Reimanis, B. J. Dalgleish, M. Brahy, M. Rühle and A. G. Evans	2645 Effects of plasticity on the crack propagation resistance of a metal/ceramic interface
M. Sutcu and W. B. Hillig	2653 The effect of fiber-matrix debond energy on the matrix cracking strength and the debond shear strength
L. Cooreman, J. Van Humbeeck and L. Delaey	2663 Thermoelectric power measurements on stabilised Cu-Zn-Al martensite
T. Hirano	2667 Improvement of room temperature ductility of stoichiometric Ni <sub>3</sub> Al by unidirectional solidification
T. Senuma, H. Yada, R. Shimizu and J. Harase	2673 Textures of low carbon and titanium bearing extra low carbon steel sheets hot rolled below their $A_{R3}$ temperatures
G. J. Merchant and S. H. Davis	2683 Morphological instability in rapid directional solidification
N. J. Petch and R. W. Armstrong	2695 The tensile test

- V. Pierron-Bohnes,  
S. Lefebvre, M. Bessiere  
and A. Finel
- W. Wagner
- G. Spanos and  
H. I. Aaronson
- J. Pons, F. C. Lovey  
and E. Cesari
- R. R. Kapoor and  
T. W. Eagar
- R. R. Kapoor and  
T. W. Eagar
- 2701 Short range order in a single crystal of Fe-19.5 at.% Al in the ferromagnetic range measured through X-ray diffuse scattering
- 2711 The influence of precursor fluctuations on the kinetics of  $\alpha$ -Co precipitation in dilute CuCo alloys
- 2721 The interfacial structure and habit plane of proeutectoid cementite plates
- 2733 Electron microscopy study of dislocations associated with thermal cycling in a Cu-Zn-Al shape memory alloy
- 2741 Thermodynamic data from diffusion couples—I
- 2755 Thermodynamic data from diffusion couples—II

**Reproduced with the permission of Pergamon Press Inc., by University  
Microfilms Inc. Duplication or resale without permission is prohibited.**

